

## INTEGRATED DISPOSAL FACILITY CHANGE CONTROL LOG

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated, and transparent manner. Each unit addendum will have a “**Last Modification Date**” which represents the last date the portion of the unit has been modified. The “**Modification Number**” represents Ecology’s method for tracking the different versions of the permit. This log will serve as an up-to-date record of modifications and version history of the unit.

Last modification to Integrated Disposal Facility **September 1, 2022**

| Chapters  | Last Modification Date | Modification Number             |
|---|------------------------|---------------------------------|
| Unit-Specific Permit Conditions   | 02/01/2021             | PCN-IDF-2020-06<br>(8C.2021.Q1) |
| 1.0 Part A Form   | 02/01/2021             | PCN-IDF-2020-06<br>(8C.2021.Q1) |
| 2.0 Topographic Map Description   | 09/30/2014             |                                 |
| 3.0 Waste Analysis Plan   | 06/30/2013             |                                 |
| 4.0 Process Information   | 09/08/2020             | PCN-IDF-2020-04<br>(8C.2020.Q3) |
| 4A1 Phase I Critical Systems Design Report                                | 09/08/2020             | PCN-IDF-2020-04<br>(8C.2020.Q3) |
| 4A2 Critical Systems Tables & Data Sheets                                 | 03/31/2008             |                                 |
| 4A3 Critical Systems Design Drawings                                      | 09/01/2022             | PCN-IDF-2022-01<br>(8C.2022.Q3) |
| 4B Detailed Design Cell 1 Construction<br>Quality Assurance Plan          | 04/09/2006             |                                 |
| 4C Facility Response Action Plan  | 04/09/2006             |                                 |
| 4D Construction Specifications (C-1),<br><a href="#">RPP-18489, Rev.1</a> | 09/08/2020             | PCN-IDF-2020-04<br>(8C.2020.Q3) |
| <a href="#">C7 Leachate Monitoring Plan</a>                               |                        |                                 |
| <a href="#">C7A Sampling and Analysis Plan for IDF<br/>Leachate</a>       |                        |                                 |
| <a href="#">C8 Sub-Surface Liquids Monitoring and<br/>Operations Plan</a> |                        |                                 |
| C9 Infrastructure Construction<br>Specification                           | 09/08/2020             | PCN-IDF-2020-04<br>(8C.2020.Q3) |
| 5.0 Groundwater Monitoring  | 06/30/2010             |                                 |
| 6.0 Procedures to Prevent Hazards   | 11/23/2020             | PCN-IDF-2020-05<br>(8C.2020.Q4) |
| 7.0 Reserved  |                        |                                 |
| 8.0 Personnel Training  | 09/30/2014             |                                 |
| 9.0 Reserved  |                        |                                 |

|  |                               |                                 |
|--|-------------------------------|---------------------------------|
| 10.0 Reserved  |                               |                                 |
| 11.0 Closure   | 09/30/2014                    |                                 |
| <u>11A Visual Sampling Plan Report Documentation</u> |                               |                                 |
| 12.0 Reserved  |                               |                                 |
| 13.0 Other Federal and State Laws                    | 04/09/2006                    |                                 |
| <b>Addenda</b>                                       | <b>Last Modification Date</b> | <b>Modification Number</b>      |
| Addendum J.1 Pre-Active Life Contingency Plan        | 11/23/2020                    | PCN-IDF-2020-05<br>(8C.2020.Q4) |
| Addendum J.2 Active Life Contingency Plan            | 05/23/2016                    | 8C.2016.Q1                      |

**INTEGRATED DISPOSAL FACILITY  
PART III, OPERATING UNIT GROUP 11  
UNIT-SPECIFIC PERMIT CONDITIONS  
CHANGE CONTROL LOG**

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated, and transparent manner. Each unit addendum will have its own change control log with a modification history table. The “**Modification Number**” represents Ecology’s method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Modification History Table

| Modification Date | Modification Number          |
|-------------------|------------------------------|
| 02/01/2021        | PCN-IDF-2020-06 (8C.2021.Q1) |
| 11/23/2020        | PCN-IDF-2020-05 (8C.2020.Q4) |
| 09/08/2020        | PCN-IDF-2020-04 (8C.2020.Q3) |
| 06/11/2020        | PCN-IDF-2020-03 (8C.2020.Q2) |
| 08/21/2018        | PCN-IDF-2018-01 (8C.2018.Q3) |
| 08/25/2016        | 8C.2016.Q2                   |

This page intentionally left blank.

DRAFT

1  
2  
3  
4  
5  
6

**INTEGRATED DISPOSAL FACILITY  
PART III, OPERATING UNIT GROUP 11  
UNIT-SPECIFIC PERMIT CONDITIONS**

DRAFT

1  
2  
3  
4  
5

This page intentionally left blank.

DRAFT

**PART III, OPERATING UNIT GROUP 11, UNIT-SPECIFIC PERMIT CONDITIONS  
INTEGRATED DISPOSAL FACILITY**

**UNIT DESCRIPTION**

The Integrated Disposal Facility (IDF) is permitted to operate two Leachate Collection System (LCS) dangerous waste management units (DWMUs) as miscellaneous units to store leachate collected from the IDF disposal cells in accordance with Washington Administrative Code (WAC) 173-303-680. Each LCS DWMU includes a Leachate Collection Unit (LCU) for leachate storage and ancillary equipment for the transfer of leachate from the disposal cells. Ancillary equipment is comprised of the Crest Pad Building, Leachate Transfer Building, combined sump, and transfer piping.

This document sets forth the operating conditions for IDF.

**III.11.A COMPLIANCE WITH APPROVED PERMIT**

The Permittees shall comply with all requirements set forth in the IDF Permit Conditions, the Chapters and Appendices specified in Permit Condition III.11.A and the Amendments specified in Permit Conditions III.11.B through III.11.I. All subsections, figures, and tables included in these portions are enforceable unless stated otherwise:

**OPERATING UNIT 11**

- Chapter 1.0 Part A Form, dated February 1, 2021
- Chapter 2.0 Topographic Map Description, dated September 30, 2014
- Chapter 3.0 Waste Analysis Plan, dated June 30, 2013
- Chapter 4.0 Process Information, dated September 08, 2020
- Appendix 4A1 Phase 1 Critical System Design Report (as applicable to critical systems), dated September 08, 2020
- Appendix 4A2 Critical Systems Tables & Data Sheets
- Appendix 4A3 Critical Systems Design Drawings
- Appendix 4B Detailed Design Cell 1 Construction Quality Assurance Plan, dated April 9, 2006
- Appendix 4C Facility Response Action Plan, dated April 9, 2006
- Appendix 4D Construction Specifications (C-1), (RPP-18489, Rev. 1), dated September 08, 2020
- Appendix C7 Leachate Monitoring Plan
- Appendix C7A Sampling and Analysis Plan for IDF Leachate
- Appendix C8 Sub-Surface Liquids Monitoring and Operations Plan
- Appendix C9 Infrastructure Construction Specification (CHPRC-03953, Rev. 0), dated September 08, 2020
- Chapter 5.0 Groundwater Monitoring, dated June 30, 2010
- Chapter 6.0 Procedure to Prevent Hazards, dated November 23, 2020
- Addendum J.1 Pre-Active Life Contingency Plan, dated November 23, 2020
- Addendum J.2 Active Life Contingency Plan, dated March 31, 2016

Chapter 8.0 Personnel Training, dated September 30, 2014

Chapter 11.0 Closure, dated September 30, 2014

Appendix 11A Visual Sampling Plan Report Documentation

Chapter 13.0 Other Federal and State Laws, dated April 9, 2006

General and Standard Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit, WA7890008967 (Permit) conditions (Part I and Part II Conditions) applicable to the IDF are identified in Permit Attachment 9, *Permit Applicability Matrix*.

**DEFINITIONS**

The following definitions are specific to the IDF.

LCS: miscellaneous unit also called LCU to store leachate collected from the IDF disposal cells and ancillary equipment for the transfer of leachate from the disposal cells, in accordance with WAC 173-303-680. IDF is permitted to operate two LCS DWMUs. Ancillary equipment is comprised of the Crest Pad Building, Leachate Transfer Building, combined sump, and transfer piping.

Leak Detection System for the LCU: A leak detection system for the LCU allows leachate that may leak through the primary liner to drain to a shallow sump at the center of the unit. Leachate will be then conveyed through pipe to the leak detection chamber in the combined sump located outside the perimeter of the unit. Leachate collected in the combined sump is monitored by a moisture detector to determine any leakage from the LCU primary liner.

**ACRONYMS**

The following acronyms are specific to the IDF unit:

LCS Leachate Collection System

LCU Leachate Collection Unit

**III.11.B AMENDMENTS TO THE APPROVED PERMIT**

**III.11.B.1** Portions of Permit Attachment 4, *Hanford Emergency Management Plan* that are not made enforceable by inclusion in the applicability matrix for that document, are not made enforceable by reference in this document.

**III.11.B.2** Permittees must comply with all applicable portions of the Permit. The facility and unit-specific recordkeeping requirements are distinguished in the General Information Portion of the Permit, and are tied to the Permit conditions.

**III.11.B.3** The scope of this Permit is restricted to the landfill construction and operation as necessary to dispose of: (1) Immobilized Low-Activity Waste (ILAW) from the Waste Treatment Plant (WTP), and (2) the Demonstration Bulk Vitrification System (DBVS) and IDF operational waste as identified in Chapter 4.0. Future expansion of the RCRA trench, or disposal of other wastes not specified in this Permit, is prohibited unless authorized via modification of this Permit.

**III.11.B.4** In accordance with WAC 173-303-806(11)(d), this Permit shall be reviewed every five (5) years after the effective date and modified, as necessary, in accordance with WAC 173-303-830(3).

**III.11.B.5** Inspection Requirements–Pre-Active Life Period and Active Life Period

The Permittees will comply with the inspection requirements specific to Chapter 6.0, “Procedures to Prevent Hazards,” and Permit Condition II.O, in accordance with WAC 173-303-320, -395, -630, -640, -650, -665, and -680, incorporated by reference.

- III.11.B.5.a** The Permittees will conduct inspections of the IDF according to the following requirements:
- III.11.B.5.a.i** Prior to the start of the Active Life of the IDF as defined in WAC 173-303-040, according to Chapter 6.0, Table 6-2.
- III.11.B.5.a.ii** Following the start of the Active Life of the IDF as defined in WAC 173-303-040, according to Chapter 6.0, Table 6-32A.
- III.11.B.5.b** The Permittees will remedy any problems revealed by inspections conducted pursuant to Permit Condition III.11.B.5.a on a schedule, which prevents hazards to the public health and the environment and as agreed to in writing, by the Department of Ecology (Ecology). Where a hazard is imminent or has already occurred, remedial action must be taken immediately.
- III.11.B.5.c** Reserved
- III.11.B.5.d** Rainwater Management
- III.11.B.5.e** Prior to the start of the Active Life of the IDF, the Permittees will manage the discharge of such water in accordance with the pollution prevention and best management practices required by State Waste Discharge Permit Number ST-4511.
- III.11.B.5.e.i** Management of Liquids Collected in the Leachate Collection and Removal System (LCRS), Leak Detection System (LDS), and Secondary Leak Detection System (SLDS) prior to the start of the Active Life of the IDF.
- III.11.B.5.e.ii** Permittees shall manage the liquid in the LCRS in a manner that does not allow the fluid head to exceed 30.5 cm above the flat 50-foot by 50-foot LCRS sump High Density Polyethylene (HDPE) bottom liner, and the LCRS sump trough, except for storms that exceed the 25-year, 24-hour storm event [WAC 173-303-665(2)(h)(ii)]. Liquid with a depth greater than 30.5 cm above the LCRS liner will be removed at the earliest practicable time after detection (not to exceed 5 working days).
- III.11.B.5.e.iii** Accumulated liquid of pumpable quantities in the LDS and SLDS will be managed in a manner that does not allow the fluid head to exceed 30.5 cm above the LDS liner or SLDS liner [WAC 173-303-665(2)(h)(ii) and (iii)]. Liquid with a depth greater than 30.5 cm above a liner will be removed at the earliest practicable time after detection (not to exceed 5 working days).
- III.11.B.5.e.iv** The Permittees will use a flow meter to check if the amount of actual liquid pumped corresponds to the amount accumulated in the LCU to verify the proper function of the leachate collection and removal sump pumps with each use. The Permittees will document in the IDF portion of the facility operating record appropriate quality assurance/quality control requirements for selection and operation of the flow meter based on the required verification. In addition, the Permittees will evaluate the leachate transfer lines for freeze and thaw damage when ambient conditions may cause such damage to occur. The Permittees will document the methods and criteria used for purposes of this evaluation, along with an appropriate justification.
- III.11.B.5.e.v** The Permittee will inspect for liquids after significant rainfall events.
- III.11.B.5.e.vi** The Permittees will annually verify monitoring gauges and instruments are in current calibration; calibration will be performed annually or more frequently at intervals suggested by the manufacturer (refer to Chapter 4.0, Section 4.3.7.4).

**III.11.B.5.f** The Permittees will monitor liquids in the LCRS and LDS to ensure the action leakage rate (Chapter 4.0, Appendix 4A) is not exceeded.

**III.11.B.5.g** Soil Stabilization

Prior to the first placement of waste in the IDF, the Permittee will apply soil stabilization materials as needed to prevent soil erosion in and around the landfill.

**III.11.C Design Requirements**

**III.11.C.1** IDF is designed in accordance with WAC 173-303-~~665 and WAC 173-303-640, -650, -665, and -680, and~~ as described in Chapter 4.0. Design changes impacting IDF critical systems ~~will~~shall be performed in accordance with Permit Conditions III.11.D.1.d.i and III.11.D.1.d.ii.

**III.11.C.1.a** IDF Critical Systems include the following: the LCRS, LCUF, LDS, Liner System (LS), and closure cap. H-2 Drawings for the LCRS, LCUF, LDS, and LS are identified in Appendix 4A, Section 3 of this Permit. Drawings for the closure cap will be provided pursuant to Permit Condition III.11.C.1.c.

The Permittees shall construct and operate the IDF in accordance with all specifications contained in RPP-18489, Rev 0. Critical systems, as defined in the definitions section of the Site-wide RCRA Permit, are identified in Appendix 4A, Section 1 of this Permit.

**III.11.C.1.b** Landfill Cap

At final closure of the landfill, the Permittees shall cover the landfill with a final cover (closure cap) designed and constructed [WAC 173-303-665(6), WAC 173-303-806(4)(h)] to: provide long-term minimization of migration of liquids through the closed landfill; function with minimum maintenance; promote drainage and minimize erosion or abrasion of the cover; accommodate settling and subsidence so that the cover's integrity is maintained; and have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

**III.11.C.1.c** Compliance Schedule

Proposed conceptualized final cover design is presented in Chapter 110, Closure Requirements. Six months prior to start of construction of IDF landfill final cover (but no later than 6 months prior to acceptance of the last shipment of waste at the IDF), the Permittees shall submit IDF landfill final cover design, specifications and Construction Quality Assurance (CQA) Plan to Ecology for review and approval. No construction of the final cover may proceed until Ecology approval of the final design is given, through a permit modification.

**III.11.C.1.d** The Permittees shall notify Ecology at least sixty (60) calendar days prior to the date it expects to begin closure of the IDF landfill in accordance with WAC 173-303-610(3)(c).

**III.11.C.2** Design Reports

**III.11.C.2.a** New Tank Design Assessment Report

Permittees shall generate a written report in accordance with WAC 173-303-640(3)(a), providing the results of the LCUF system design assessment. The report shall be reviewed and certified by an Independent Qualified Registered Professional Engineer (IQRPE)<sup>1</sup> in accordance with WAC-173-303-810(13)(a).

<sup>1</sup>"Independent Qualified Registered Professional Engineer," as used here and elsewhere with respect to Operating Unit Group 11, means a person who is licensed by the state of Washington, or a state which has reciprocity with the state of Washington as

**III.11.C.2.b Compliance Schedule**

Permittees shall submit the ~~LCU~~<sup>F</sup> design assessment report to Ecology along with the IQRPE certification, prior to construction of any part of the tank system including ancillary equipment.

**III.11.D CONSTRUCTION REQUIREMENTS**

**III.11.D.1 Construction Quality Assurance**

**III.11.D.1.a** Ecology shall provide field oversight during construction of critical systems. In cases where an Engineering Change Notice (ECN) and/or Non-Conformance Report (NCR) are required, Ecology and the Permittees shall follow steps for processing changes to the approved design per Permit Conditions III.11.D.1.d.i and III.11.D.1.d.ii.

**III.11.D.1.b** Permittees shall implement the CQA plan (Appendix 4B of the Permit) during construction of IDF.

**III.11.D.1.b.i** The Permittees will not receive waste in the IDF until the owner or operator has submitted to Ecology by certified mail or hand delivery a certification signed by the CQA officer that the approved CQA plan has been successfully carried out and that the unit meets the requirements of WAC 173-303-665(2)(h) or (j); and the procedure in WAC 173-303-810(14)(a) has been completed. Documentation supporting the CQA officer's certification shall be furnished to Ecology upon request.

**III.11.D.1.c Construction Inspection Reports**

The Permittees ~~will~~<sup>shall</sup> submit a report documenting the results of the ~~LCS~~<sup>leachate tank</sup> installation inspection. This report must be prepared by an independent, qualified installation inspector or ~~an~~<sup>a</sup> ~~professional~~ IQRPE either of whom is trained and experienced in the proper installation of tank systems or components. The Permittees will remedy all discrepancies before the ~~LCS~~<sup>tank system</sup> is placed in use. This report ~~will~~<sup>shall</sup> be submitted to Ecology ~~at least ninety (90)~~<sup>at least ninety (90)</sup> days prior to ~~the~~<sup>the</sup> IDF operation and be included in the ~~IDF-Hanford Facility~~<sup>IDF</sup> Operating Record, ~~IDF portion~~<sup>IDF portion</sup>. [WAC 173-303-640(3)~~(h)~~<sup>(a)</sup> and WAC 173-303-650(4)(a)].

**III.11.D.1.d ECN/NCR Process for Critical Systems**

Portions of the following conditions for processing ECN and non-conformance reporting were extracted from and supersede Site-wide General Permit Condition II.L.

**III.11.D.1.d.i ECN for Critical Systems**

During construction of the IDF, the Permittees shall formally document changes to the approved designs, plans, and specifications, identified in Appendices 4A, 4B, 4C, 4D, and C9 of this Permit, with an ECN.

The Permittees shall maintain all ECNs in the IDF unit-specific Operating Record and shall make them available to Ecology upon request or during the course of an inspection. The Permittees shall provide to Ecology copies of proposed ECNs affecting any critical system within five (5) working days of initiating the ECN. Identification of critical systems is included in Permit Condition III.11.C.1 and Appendix 4A of this Permit. Within five (5) working days, Ecology will review a proposed ECN modifying a critical

---

defined in Revised Code of Washington (RCW) 18.43.100, and who is not an employee of the owner or operator of the facility for which construction or modification certification is required. A qualified professional engineer is an engineer with expertise in the specific area for which a certification is given.

system and inform the Permittees whether the proposed ECN, when issued, will require a Class 1, 2, or 3 Permit modification.

**III.11.D.1.d.ii** Non-Conformance Reporting for Critical Systems

**III.11.D.1.d.ii.a** During construction of the IDF, the Permittees shall formally document with an NCR, any work completed which does not meet or exceed the standards of the approved design, plans and specifications, identified in Appendices 4A, 4B, 4C, 4D, and C9 of this Permit. The Permittees shall maintain all NCRs in the IDF unit-specific Operating Record and shall make them available to Ecology upon request, or during the course of an inspection.

**III.11.D.1.d.ii.b** The Permittees shall provide copies of NCRs affecting any critical or regulated system to Ecology within five (5) working days after identification of the non-conformance. Identification of critical systems is included in Permit Condition III.11.C.1 and Appendix 4A of this Permit. Ecology will review a NCR affecting a critical system and notify the Permittees within five (5) working days, in writing, whether a Permit modification is required for any non-conformance, and whether prior approval is required from Ecology before work proceeds, which affects the nonconforming item.

**III.11.D.1.d.ii.c** As-Built Drawings

Upon completing construction of IDF, the Permittees shall produce as-built drawings of the project, which incorporate the design and construction modifications resulting from all project ECNs and NCRs, as well as modifications made pursuant to WAC 173-303-830. The Permittees shall place the drawings into the Operating Record within twelve (12) months of completing construction.

**III.11.D.2** The Permittees shall not reduce the minimum frequency of destructive testing less than one test per 500 feet of seam, without prior approval in writing from Ecology.

**III.11.E** **GROUNDWATER AND GROUNDWATER MONITORING**

Groundwater shall be monitored in accordance with + and the provisions contained in the Ecology-approved facility "Groundwater Monitoring" (Chapter 5.0). All wells used to monitor the groundwater beneath the unit shall be constructed in accordance with the provisions of WAC 173-160.

**III.11.E.1** Groundwater Monitoring Program

**III.11.E.1.a** Prior to initial waste placement in the IDF landfill, the Permittees shall sample all groundwater monitoring wells in the IDF network twice quarterly for one first year to determine baseline conditions. For the first sampling event (and only the first), samples for each well will include all constituents in 40 Code of Federal Regulations (CFR) 264 Appendix IX. Thereafter, sampling will include only those constituents as specified in Chapter 5.0, Table 5-2: Chromium (filtered and unfiltered the first year to compare results), Specific conductance, Total organic carbon, Total organic halide, and pH. Other constituents to be monitored but not statistically compared include alkalinity, anions, Inductively Coupled Plasma metals, and turbidity. These will provide important information on hydrogeologic characteristics of the aquifer and may provide indications of encroaching contaminants from other facilities not associated with IDF.

**III.11.E.1.b** After the baseline monitoring is completed, and data is analyzed, the Permittees and Ecology shall assess revisions to Chapter 5.0, Table 5-2. Subsequent samples will be collected annually and will include constituents listed in Table 5-2 as approved by Ecology. All data analysis will employ Ecology approved statistical methods pursuant to WAC 173-303-645. Changes to Chapter 5.0 will be subject to the permit modification procedures under WAC 173-303-830.

**III.11.E.1.c** All constituents used as tracers to assess performance of the facility through computer modeling should be sampled at least annually to validate modeling results. Groundwater monitoring data and analytes to be monitored will be reviewed periodically as defined in Chapter 5.0 of this Permit.

**III.11.E.1.d** Upon Ecology approval of the leachate monitoring plan, leachate monitoring and groundwater monitoring activities should be coordinated as approved by Ecology to form an effective and efficient means of monitoring the performance of the IDF facility.

**III.11.E.1.e** Groundwater monitoring data shall be reported to Ecology annually by July 31. The annual report shall include monitoring results for the 12-month period from January 1 through December 31.

### **III.11.F LEACHATE COLLECTION COMPONENT MANAGEMENT**

Permittees shall design, construct, and operate all leachate collection systems to minimize clogging during the Active Life and post-closure period.

#### **III.11.F.1 Leachate Collection and Removal System**

~~**III.11.F.1.a** At least 120 days prior to initial waste placement in the IDF, the Permittees shall submit a leachate monitoring plan to Ecology for review, approval, and incorporation into the permit. Upon approval by Ecology, this plan will be incorporated into the Permit as a Class <sup>1</sup> modification. The Permittees shall not accept waste into the IDF until the requirements of the leachate monitoring plan have been incorporated into this Permit.~~

~~**III.11.F.1.b**~~**III.11.F.1.a** Leachate in the LCRS (primary sump) ~~shall~~will be sampled and analyzed monthly for the first year of operation of the facility and quarterly thereafter, as described in Appendix C7A, "Sampling and Analysis Plan for IDF Leachate (pursuant to WAC 173-303-200)." Additionally, leachate from the LCU's will~~shall~~ be sampled and analyzed semi-annually to meet waste acceptance criteria at the receiving Treatment Storage and Disposal Facility.

~~**III.11.F.1.c**~~**III.11.F.1.b** Permittees shall manage the leachate in the LCRS in a manner that does not allow the fluid head to exceed 30.5 cm above the flat 50-foot by 50-foot LCRS sump HDPE bottom liner except for rare storm events as discussed in Chapter 4.0, Section 4.23.6.1 and the LCRS sump trough [WAC 173-303-665(2)(h)(ii)]. Liquid with a depth greater than 30.5 cm above the SLDS liner will be removed at the earliest practicable time after detection (not to exceed 5 working days).

~~**III.11.F.1.d**~~**III.11.F.1.c** After initial waste placement, Permittees shall manage all leachate from the permitted cell as dangerous waste (designated with Dangerous Waste Number F039) in accordance with WAC 173-303.

#### **III.11.F.2 Monitoring and Management of LDS (LDS/Secondary Sump)**

**III.11.F.2.a** Permittees shall manage the leachate in the LDS in a manner that does not allow the fluid head to exceed 30.5 cm above the LDS liner [WAC 173-303-665(2)(h)(ii)].

- III.11.F.2.b** Permittees shall monitor and record leachate removal for comparison to the Action Leakage Rate (ALR) as described in Appendix 4C, [“Facility Response Action Plan.”](#) If the leachate flow rate in the LDS exceeds the ALR, the Permittees shall implement the Ecology approved Response Action Plan (Appendix 4C).
- III.11.F.2.c** Leachate from the LDS (secondary sump) shall be sampled semi-annually if a pumpable quantity of leachate is available for sampling.
- III.11.F.2.d** Accumulated liquid of pumpable quantities in the LDS will be managed in a manner that does not allow the fluid head to exceed 30.5 cm above the LDS liner [WAC 173-303-665(2)(h)(ii) and (iii)]. Liquid with a depth greater than 30.5 cm above the LDS liner will be removed at the earliest practicable time after detection (not to exceed 5 working days).
- III.11.F.3** Monitoring and Management of the SLDS
- III.11.F.3.a** At least 180 days prior to initial waste placement, the Permittees shall submit to Ecology for approval a Sub-Surface Liquids Monitoring and Operations Plan (SLMOP) for the SLDS to include the following: monitoring frequency, pressure transducer configuration, liquid collection and storage processes, sampling and analysis and response actions. The SLMOP shall be approved by Ecology prior to placement of waste in the IDF, and incorporated into the Permit as a Class <sup>1</sup> modification.
- III.11.F.3.b** Permittees shall monitor and manage the SLDS (tertiary sump) pursuant to the approved SLMOP.
- III.11.F.3.c** Accumulated liquid of pumpable quantities in the SLDS will be managed in a manner that does not allow the fluid head to exceed 30.5 cm above the SLDS liner [WAC 173-303-665(2)(h)(ii) and (iii)]. Liquid with a depth greater than 30.5 cm above the SLDS liner will be removed at the earliest practicable time after detection (not to exceed 5 working days).
- III.11.F.3.d** After initial waste placement, Permittees shall manage all leachate from the permitted cell as dangerous waste in accordance with WAC 173-303.
- III.11.F.4** [Monitoring and Management of the LCS](#)
- III.11.F.4.a** [The Permittees will operate and maintain the physical structure of the LCS as documented in the applicable sections of Chapter 4.0.](#)
- III.11.F.4.b** [The Permittees will develop a schedule for conducting Integrity Assessments on the LCUs before acceptance of waste \[WAC 173-303-640\(3\)\]. The schedule will meet the requirements of Chapter 4.0. The Permittees will maintain a copy of the schedule in the Hanford Facility Operating Record, IDF portion. Periodic integrity assessments will be conducted according to the schedule and results documented in the Hanford Facility Operating Record, IDF portion.](#)
- III.11.F.4.c** [If there is an unexpected change in liquid level or observed evidence of a leak from the LCU and/or ancillary equipment, resulting in a spill into the environment, the Permittees must follow the required actions detailed in the applicable section of Chapter 4.0, “Process Information,” in accordance with WAC 173-303-650\(5\) and WAC 173-303-640\(7\).](#)
- III.11.F.4.d** [Permittees will monitor and record leachate removal from the combined sump for comparison to the ALR as described in Appendix 4C, “Facility Response Action Plan.” If the leachate leakage rate in a combined sump exceeds the ALR, the Permittees will implement the Ecology approved response action plan.](#)

**III.11.F.4.e** If the bottom liners are replaced or modified, then the Permittees will install a low hydraulic conductivity geosynthetic clay liner under the bottom geomembrane liner, or an equivalent material.

**III.11.F.4.f** No later than six (6) months prior to acceptance of the last shipment of waste at the IDF, the Permittees will submit a permit modification request to Ecology to add Sampling and Analysis Plan to support clean closure of the LCS DWMUs. The Sampling and Analysis Plan will include the closure performance standards in accordance with WAC 173-303-610(2), as described in Chapter 11.0.

**III.11.F.4.g** The Permittees will monitor liquids in the LCS to ensure the action leakage rate (Appendix 4C) is not exceeded.

**III.11.G CONSTRUCTION WATER MANAGEMENT**

**III.11.G.1** During construction, it is anticipated that liquids will accumulate on top of all liners and sumps. Permittees shall manage the construction wastewater in accordance with State Waste Discharge Permit ST-4511.

**III.11.G.2** Liquid accumulation within the LCRS, LDS, and SLDS prior to initial waste placement will be considered construction wastewater (i.e., not leachate).

**III.11.H LANDFILL LINER INTEGRITY MANAGEMENT & LANDFILL OPERATIONS**

**III.11.H.1** Permittees shall design, construct, and operate the landfill in a manner to protect the liners from becoming damaged. Temperature: waste packages with elevated temperatures shall be evaluated and managed in a manner to maintain the primary (upper) liner below the design basis temperature for the liner (e.g., 160°F). Weight: waste, fill material and closure cover shall be placed in a manner that does not exceed the allowable load bearing capacity of the liner (weight per area 13,000 lb/ft<sup>2</sup>). Puncture: at least 3 feet of clean backfill material shall be placed as an operations layer over the leachate collection and removal system to protect the system from puncture damage.

**III.11.H.1.a** All equipment used for construction and operations inside of the IDF shall meet the weight limitation as specified in Permit Condition III.11.H.1. Only equipment that can be adequately supported by the operations layer as specified in Permit Condition III.11.H.1 (e.g., will not have the potential to puncture the liner) shall be used inside of the IDF. All equipment used for construction and operations outside of the IDF shall not damage the berms. Changes to any equipment will follow the process established by Condition II.R of the Site-wide Permit. Within 120 days from the effective date for the permit, a process for demonstrating compliance with this condition shall be submitted for review by Ecology. This process will be incorporated into appropriate IDF operating procedures prior to IDF operations.

**III.11.H.2** The Permittees shall construct berms and ditches to prevent run-on and runoff in accordance with the requirements of Chapter 4.0, Section 4.23.8 of the IDF portion of this Permit. Before the first placement of waste in the IDF, the Permittees shall submit to Ecology a final grading and topographical map on a scale sufficient to identify berms and ditches used to control run-on and runoff. Upon approval, Ecology will incorporate these maps into the permit as a Class <sup>1</sup>1 modification.

**III.11.H.3** The Permittees shall operate the RCRA IDF Cell (Cell 1) in accordance with WAC 173-303-665(2) and the operating practices described in Chapters 3.0, 4.0, 6.0, 8.0, Addendum J.1, Addendum J.2, and Appendix 4A, Section 1, subsection 7, except as otherwise specified in this Permit.

**III.11.H.4** The Permittees shall maintain a permanent and accurate record of the three-dimensional location of each waste type, based on grid coordinates, within the RCRA IDF Cell (Cell 1) in accordance with WAC 173-303-665(5).

**III.11.I WASTE ACCEPTANCE CRITERIA**

The only acceptable waste form approved for disposal at the RCRA cell of IDF are IDF operational waste, ILAW in glass form from the WTP Low-Activity Waste (LAW) Vitrification Facility and ILAW from the Bulk Vitrification Research Demonstration and Development Facility (up to 50 boxes). Specifics about waste acceptance criteria for each of these wastes are detailed below.

No other waste forms may be disposed at the RCRA cell of IDF unless authorized via a final permit modification decision. Requests for Permit modifications must be accompanied by an analysis adequate for Ecology to comply with State Environmental Policy Act (SEPA), as well as by a risk assessment and groundwater modeling to show the environmental impact. Permit Condition III.11.I.5 outlines the process by which waste sources in the IDF are modeled in an ongoing risk budget and a groundwater impact analysis.

**III.11.I.1** Six months prior to IDF operations Permittees shall submit to Ecology for review, approval, and incorporation into the permit, all waste acceptance criteria to address, at a minimum, the following: physical/chemical criteria, liquids and liquid containing waste, land disposal restriction treatment standards and prohibitions, compatibility of waste with liner, gas generation, packaging, handling of packages, minimization of subsidence.

**III.11.I.1.a** All containers/packages shall meet void space requirements pursuant to WAC 173-303-665(12).

**III.11.I.1.b** Compliance Schedule

**III.11.I.1.b.i** Six months prior to IDF operations, the Permittees shall submit to Ecology for review, approval, and incorporation into the Permit any necessary modifications to the IDF "Waste Analysis Plan" (Chapters 3.0 of the IDF portion of this Permit).

**III.11.I.2 ILAW Waste Acceptance Criteria**

The only ILAW forms acceptable for disposal at IDF are: (1) approved glass canisters that are produced in accordance with the terms, conditions, and requirements of the WTP portion of the Permit, and (2) the 50 bulk vitrification test boxes as specified in the DBVS test plans.

To assure protection of human health and the environment, it is necessary that the appropriate quality of glass be disposed at IDF. The Land Disposal Restrictions (LDR) Treatment Standard for eight metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver), when associated with High-Level Waste, is High Level VIT (HLVIT) (40 CFR 268). Because these metals are constituents in the Hanford Tanks Waste, the LDR standard for ILAW disposed to IDF is HLVIT.

For any ILAW glass form(s) that the United States Department of Energy (DOE) intends to dispose of in IDF, DOE will provide to Ecology for review, an ILAW Waste Form Technical Requirements Document (IWTRD). The IWTRD will contain:

**III.11.1.2.a** WTP ILAW Waste Acceptance Criteria

**III.11.1.2.a.i** A description of each specific glass formulation that DOE intends to use including a basis for why each specific formulation is proposed for use, which specific tank wastes the glass formulation is proposed for use with, the characteristics of the glass that are key to satisfactory performance (e.g., Vapor Hydration Test [VHT], Product Consistency Test [PCT], and Toxicity Characteristic Leaching Procedure [TCLP] and/or other approved performance testing methodologies that the parties agree are appropriate and necessary), the range in key characteristics anticipated if the specific glass formulation is produced on a production basis with tank waste, and the factors that DOE must protect against in producing the glass to ensure the intended glass characteristics will exist in the actual ILAW.

**III.11.1.2.a.ii** A performance assessment that provides a reasonable basis for assurance that each glass formulation will, once disposed of in IDF in combination with the other waste volumes and waste forms planned for disposal at the entire IDF, be adequately protective of human health and the environment; and will not violate or be projected to violate all applicable state and federal laws, regulations and environmental standards.

Within 60 days of a request by Ecology, the Permittees shall provide a separate model run using Ecology's assumptions and model input.

**III.11.1.2.a.iii** A description of production processes including management controls and quality assurance/quality control requirements that assure that glass produced for each formulation will perform in a reasonably similar manner to the waste form assumed in the performance assessment for that formulation.

The Permittees shall update the IWTRD consistent with the above requirements for review by Ecology consistent with their respective roles and authority as provided under the Tri-Party Agreement (TPA). Ecology comments shall be dispositioned through the Review Comment Record (RCR) process and will be reflected in further modeling to modify the IDF ILAW Chapter 3.0, "Waste Analysis Plan" as appropriate.

The initial IWTRD contained glass formulation data as required by Permit Condition III.11.1.2.a.i, and was submitted on December 18, 2006 (AR Accession # 0906020182). The performance assessment required by Permit Condition III.11.1.2.a.ii, and the quality assurance/quality control requirements process required by Permit Condition III.11.1.2.a.iii shall be submitted for Ecology review as soon as possible after issuance of the Final Tank Closure and Waste Management Environment Impact Statement (EIS) and receipt of underlying codes and data packages, and at least 180 days prior to the date DOE expects to receive waste at IDF. At a minimum, the Permittees shall submit updates to the IWTRD to Ecology every five years or more frequently with the next one due June 30, 2015, if any of the following conditions exist:

- The Permittees submits a permit modification request allowing additional waste forms to be disposed of at IDF.
- The WTP or other vitrification facility change their glass formulations from those previously included in the IWTRD.
- An unanticipated event or condition occurs that Ecology determines would warrant an update to the IWTRD.

**III.11.1.2.a.iv** The Permittees shall not dispose of any WTP ILAW not described and evaluated in the IWTRD.

- III.11.I.3** ILAW Waste Acceptance Criteria Verification
- III.11.I.3.a** Six months prior to disposing of ILAW in the IDF, the Permittees will submit an ILAW verification plan to Ecology for review and approval. This plan will be coordinated with WTP, Ecology, and the Permittees personnel. This plan will outline the specifics of verifying ILAW waste acceptance through WTP operating parameters, and/or glass sampling. The plan will include physical sampling requirements for batches, glass formulations, and/or feed envelopes.
- III.11.I.4** DBVS Bulk Vitrification Waste Acceptance Criteria
- III.11.I.4.a** Bulk Vitrification waste forms that are acceptable to be disposed of at IDF are up to 50 boxes of vitrified glass produced pursuant to the DBVS Research, Development, and Demonstration (RD&D) Permit from processing Hanford Tank S-109 tank waste.
- III.11.I.4.b** If Bulk Vitrification is selected as a technology to supplement the WTP, the IDF portion of the Permit will need to be modified to accept Bulk Vitrification Full Scale production waste forms. This modification will need to be accompanied by appropriate TPA changes (per M-062 requirements) and adequate risk assessment information sufficient for Ecology to meet its SEPA obligations.
- III.11.I.4.c** DBVS Waste Acceptance Verification will occur on 100% of the waste packages. Pursuant to the DBVS RD&D Permit, a detailed campaign test report will be produced and submitted to Ecology detailing results of all testing performed on each waste package that is produced. IDF personnel shall review these reports to verify that the waste packages meet IDF Waste Acceptance Criteria.
- III.11.I.4.d** The Permittees shall not dispose of any waste forms that do not comply with all appropriate and applicable treatment standards, including all applicable LDR.
- III.11.I.5** Modeling–Risk Budget Tool
- III.11.I.5.a** The Permittees must create and maintain a modeling–risk budget tool, which models the future impacts of the planned IDF waste forms (including input from analyses performed as specified in Permit Conditions III.11.I.2.a through III.11.I.2.a.ii) and their impact to underlying vadose and groundwater. This software tool will be submitted for Ecology review as soon as possible after issuance of Final Tank Closure and Waste Management EIS and receipt of underlying codes and data packages, and at least 180 days prior to the date DOE expects to receive waste at IDF. The risk budget tool shall be updated at least every 5 years. The model will be updated more frequently if needed, to support permit modifications or SEPA Threshold Determinations whenever a new waste stream or significant expansion is being proposed for the IDF. This risk budget tool shall be conducted in manner that is consistent with state and federal requirements, and represents a risk analysis of all waste previously disposed of in the entire IDF (both cell 1 and cell 2) and those wastes expected to be disposed of in the future for the entire IDF to determine cumulative impacts. The groundwater impact should be modeled to evaluate fate and transport in the groundwater aquifer(s) and should be compared against various performance standards including but not limited to drinking water standards (40 CFR 141 and 40 CFR 143). Ecology will review modeling assumptions, input parameters, and results and will provide comments to the Permittees. Ecology comments shall be dispositioned through the RCR process and will be reflected in further modeling to modify the IDF ILAW waste acceptance criteria as appropriate.
- III.11.I.5.a.i** The modeling-risk budget tool will include a sensitivity analysis reflecting parameters and changes to parameters as requested by Ecology.

- 1 **III.11.I.5.a.ii** If these modeling efforts indicate results within 75% of a performance standard  
2 (including but not limited to federal drinking water standards [40 CFR 141 and  
3 40 CFR 143]), Ecology and the Permittees will meet to discuss mitigation measures or  
4 modified waste acceptance criteria for specific waste forms.
- 5 **III.11.I.5.a.iii** When considering all the waste forms to be disposed of in IDF, the Permittees shall not  
6 dispose of any waste that will result (through forward-looking modeling or in real  
7 groundwater concentrations data) in a violation of any state or federal regulatory limit,  
8 specifically including but not limited to drinking water standards for any constituent as  
9 defined in 40 CFR 141 and 40 CFR 143.
- 10 **III.11.I.6** The Permittees shall not dispose of any waste that is not in compliance with state and  
11 federal requirements as identified in Chapter 13.0.
- 12 **III.11.I.6.a** In accordance with DOE's authority under the *Atomic Energy Act of 1954*, as amended  
13 and other applicable law, prior to disposing of any mixed ILAW in the IDF, DOE will  
14 certify to the State of Washington that it has determined that such ILAW is not  
15 High-Level Waste and meets the criteria and requirements outlined in DOE's  
16 consultation with the U.S. Nuclear Regulatory Commission (USNRC) beginning in 1993  
17 (Letter from R.M. Bernero, USNRC to J. Lytle, DOE, dated March 2, 1993; Letter from  
18 J. Kinzer, DOE, to C. J. Paperiello, USNRC, Classification of Hanford Low-Activity  
19 Tank Waste Fraction, dated March 7, 1996; and Letter from C.J. Paperiello, USNRC, to  
20 J. Kinzer, DOE, Classification of Hanford Low-Activity Tank Waste Fraction, dated  
21 June 9, 1997). While the requirement to provide such certification is an enforceable  
22 obligation of this Permit, the provision of such certification does not convey, or purport  
23 to convey, authority to Ecology to regulate the radioactive hazards of the waste under this  
24 permit.
- 25 **III.11.I.7** IDF Operational Waste Acceptance Criteria
- 26 **III.11.I.7.a** IDF operational activities (including decontamination, cleanup, and maintenance) will  
27 generate a small amount of waste. Waste that can meet IDF waste acceptance without  
28 treatment will be disposed of at the IDF. All other IDF operational waste will be managed  
29 pursuant to WAC 173-303-200.  
30

1  
2  
3  
4  
5

This page intentionally left blank.

DRAFT